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A052/A101

AUTHOR: Hummitzsch, Werner

TITLE: Coated electrode for underwater welding and cutting

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1962, 36, abstract 10E200 P (Czech. pat., no. 100390, July 15, 1961)

TEXT: An electrode is proposed with a coating protected by an electro-insulating varnish and with a hollow filled rod. The metal rod contains (in %): 0.05 - 0.30 C, 0.50 - 2.00 Mn, 0.30 - 1.00 Si, 0.10 - 0.50 Zr. The filling occupying 1 - 7% of the cross-section of the electrode consists of 70 - 95% CaO, 2.5 - 15% Al and 2.5 - 15% Fe-Mn (most preferable is 85% CaO, 7.5% Al and 7.5% Fe-Mn). The thickness of the coating must be $<50\%$ of the diameter of the rod. Its composition (in weight parts): ilmenite 30, silicon 10, kaolin 8, blast-furnace Fe-Mn 15 and Na-water glass as a binder. The coating is protected by a varnish layer (0.1 - 0.2 mm) of cellulose dissolved in 10 parts of acetone. When working underwater in any position the electrode produces smooth cuts. The electrode with a filling works at an arc voltage of 28 - 40 volts and without fil-

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ling at 35 - 50 volts. When cutting with an electrode 5 mm in diameter a current of 450 - 550 amperes is needed; the length of the electrode is 350 mm. For 10-mm thick sheets the cutting speed in the downward direction is 29 - 30 cm/min. The same electrode without a filling has a speed of 24 - 30 cm/min, but the quality of the cut is worse. When welding underwater the electrode in any position produces tight seams without cracks and deep notches. The welding with electrodes of 5 mm in diameter is carried out on a current of 200 - 220 amperes, the electrode being tilted at an angle of 30 - 45° to the workpiece.

Ye. Greyl'

[Abstracter's note: Complete translation]

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